CLAIMS

1. Two-shaft vacuum pump comprising two shafts (12,14), wherein one of the shafts (14) is driven by an electric drive motor (20) and comprises a motor rotor (26), the drive motor (20) being a synchronous motor,

   characterized in that

   the motor rotor (26) is permanently excited, and

   a synchronous motor power-limiting device (58) is provided which limits the motor power (P_M) to a fixed maximum motor power (P_{Mmax}) in a limiting range above a fixed rated motor speed (n_N).

2. Two-shaft vacuum pump according to claim 1, characterized in that the power-limiting means (58) adjusts, in the limiting range, the phase angle between the magnetic field of the rotor and the electrical stator field to an angle other than 90°.

3. Two-shaft vacuum pump according to claim 1, characterized in that the power-limiting means (58) reduces the stator current in the limiting range.

4. Two-shaft vacuum pump according to claim 1 or 2, characterized in that the power-limiting device (58) adjusts, in the limiting range, the phase angle between the magnetic field of the rotor and the electrical stator field and/or the stator current as a function of the speed.

5. Two-shaft vacuum pump according to one of claims 1-4, characterized in that the driven rotor shaft (14) is of overhung configuration and supported without a supporting bearing on the motor-side end.

6. Two-shaft vacuum pump according to one of claims 1-5, characterized in that the motor rotor (26) comprises a plurality of permanent magnets (38) arranged on the outside of the motor rotor body (34).

7. Two-shaft vacuum pump according to claim 6, characterized in that the motor rotor (26) comprises a rotor enclosure (40) of a nonmagnetic material which externally encloses the motor rotor body (34) and the permanent magnets (38).

8. Two-shaft vacuum pump according to one of claims 1-7, characterized in that on the stator side a can (42) of a nonmagnetic material is provided which gas-tightly seals the motor rotor (26) with respect to the motor stator (28).

9. Two-shaft vacuum pump according to claim 8, characterized in that a pump cover (48) holding the can (42) and a stator casing (50) surrounding the stator casing (50) are integrally formed.

10. Two-shaft vacuum pump according to one of claims 7-9, characterized in that the permanent magnets (38) of the rotor are made of rare earths.